Space Science—Chart 1

Agency Near-Term Goals	Space Science Near-Term Goals	Objectives	Performance Targets
Develop lower cost missions: Chart the evolution of the universe, from origins to destiny, and understand its galaxies, stars, planets, and life	Chart the evolution of the universe, from origins to destiny, and understand its galaxies, stars, planets, and life	• Solve mysteries of the universe	• Successfully launch at least seven spacecraft, within 10 percent of budget on average. • Complete Hubble Space Telescope 3-year project and measure the Hubble constant within an accuracy of approximately 10 percent. • The Advanced X-ray Astrophysics Facility (AXAF) will record 100 images and spectra of galaxies at a resolution of better than an arcsecond and record data on approximately 50 compact stellar objects. • The Rossi X-ray Timing Explorer (RXTE) will observe physical phenomena 25,000 times closer to the event horizon of black holes than permitted with optical wavelength measurements.
		• Explore the solar system	• The Near-Earth Asteroid Rendezvous (NEAR) will orbit EROS at a distance closer than 50 kilometers, measure its shape to an accurancy of 10 meters (or better), and complete the first direct compositional measurements of an asteroid. • The Lunar Prospector will map the 75 to 80 percent of the Moon's surface not accessible during the Apollo missions and provide definitive measurements of the weak lunar magnetic field. • The Transition Region and Coronal Explorer (TRACE) will observe energy propagation from solar disturbances beginning at the bottom of the visible solar atmosphere into the corona high above with a spatial resolution five times better than previous capabilities.
		• Discover planets around other stars	• Assemble and lab-test the interferometer beam combiner connecting the twin 10-meter telescopes at the Keck Observatory in Hawaii.
		• Search for life beyond Earth	• The Galileo spacecraft will complete 11 encounters with Jupiter's moon, Europa, conducting investigations that will help determine the presence and state of water, a central consideration in understanding the possibility of life on the moon. • Initiate the Astrobiology Institute's operations by linking up to eight instititions and engaging approximately 50 investigators to promote publication of interdisciplinary research and foster effective public education and outreach on research on life in the universe.
Advance human exploration of space by successfully conducting robotic missions	Use robotic missions as forerunners to human exploration beyond low-Earth orbit	• Investigate the composition, evolution, and resources of Mars, the Moon, and small bodies	• The Mars Global Surveyor (MGS) will achieve the final science orbit, measure the topography with 10-meter precision, provide high-resolution 1.5-meter imaging data, and provide the first thermal infrared spectrometry of the planet.
		• Improve the reliability of space weather forecasting	• Conduct solar activity observations with a series of NASA spacecraft to achieve complete coverage (maximum and minimum) of the solar cycle, an increase from 35 percent.
Develop and transfer cutting-edge technologies	Develop new critical technologies to enable innovative and less costly mission and research concepts	• Develop innovative technologies for Enterprise missions and for external customers	• The New Millennium Program (NMP) will demonstrate an electric ion propulsion system with specific impulse ten times greater than chemical propulsion systems. • The Micro-Arcsecond Metrology Testbed will demonstrate an improvement in positioning accuracy to the picometer (millionth-millionths of a meter) range, ten times better than previously achieved. • The Mars 98 Lander will demonstrate an advanced robotic manipulator with improved performance of an order of magnitude compared to the manipulator used on Viking in 1976.
Share new knowledge with our customers and contribute to educational excellence	Contribute measurably to achieving the science, math, and technology education goals of our Nation, and share widely the excitement and inspiration of our missions and discoveries	• Incorporate education and enhanced public understanding of science as integral components of Space Science missions and research	• Account for 4 percent of the 150 "most important science stories" in the annual review by *Science News*. • Account for no less than 25 percent of total contributions to the college textbook *Astronomy: From the Earth to the Universe*. • Each new Space Science Enterprise mission initiated in FY99 will have a funded education and outreach program. • The Space Science Enterprise will complete an organized network of contacts by the end of FY99 to work with educators and space scientists to formulate and implement space science education and outreach programs.